

## NOTES ON THE ORGANIC REMAINS OF THE OSSEOUS CLAYS AT LAKE CALLABONNA.

By PROFESSOR RALPH TATE.

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The stratum in which the diprotodon and associated vertebrate fossils are found is a blue tenacious clay, though containing about 12 per cent. of sharp quartz-sand, as determined by mechanical separation. Overlying the blue clay is a sand, which constitutes a fringe to the lacustrine plain, and appears as islets dotting its surface. Lake Callabonna is now a salt-pan, but is occasionally submerged, either as the result of heavy local rains or by the superfluous water of Cooper Creek, reaching it by way of Strzelecki Creek and Lake Blanche.

Anxious to learn something of the physical conditions which prevailed at the time when the diprotodons inhabited this area, I have minutely searched the clay and sand, obligingly placed at my disposal by Dr. Stirling and Mr. Zeitz, for their organic contents, with the following results:—

The clay has yielded two cones of the smooth-valved form of *Callitris robusta*, R. Brown, the living sandarach-pine, so widely distributed in Australia, and certainly an inhabitant of its "dry zone;" oospores of characeous plants, probably of two species, one of which I refer with a doubt to *Chara Braunii*; fragments of a small gastropodous shell, probably of the genus *Potamopyrgus*. The charas and the mollusc are aquatic in habit, and may have endured a brackish water medium. The sand has furnished a new species of *Blanfordia*, *B. Stirlingi*, *Melania lutosa*, *Corbicula desolata*, which occurs in a living state in Cooper Creek, a cypris-like ostracod, and the charas above-mentioned. The *Blanfordia* is related to *B. striatula*, an inhabitant of brackish waterpools on the coastal tracts of Southern Australia; but this alliance does not forbid a strictly fresh-water habit, which is implied by the association with *Corbicula* and *Melania*, though it may indicate an increased salinity of the lake-waters prior to their final dessication. Indeed, it is not at all improbable that all lived in the lake while its waters were fresh, that the *Corbicula* and *Melania* succumbed when the water became brackish, and that the *Blanfordia* was unaffected by the change, but became extinct through failure of the essential medium. The sand contains also small cylindrical tubes, about one millimetre diameter, which recall agglutinated-sand cases such as are constructed by some may-

flies. However, they are freely soluble with effervescence in acid, and are, therefore, probably the calcified shapes of rootlets, which from their small and uniform size may have belonged to a cyperaceous or graminaceous plant.

BLANDFORDIA STIRLINGI, *spec. nov.*

Shell thin, subpellucid, of a pale flesh color, oval in outline, spire conical, apex obtuse or subacute, and slightly mammillated; whorls six, rather rapidly increasing in size, moderately convex, but more rapidly declinuous posteriorly, ornamented with slightly arched striae of growth, and in a spiral direction by a few threads. Aperture slightly oblique, inclining towards the columella; peritreme entire; columella effusively dilated over the umbilicus and basally. Umbilical fissure narrow, concealed by the columellar dilatation; young shells imperforate. Operculum pellucid, its exterior face deeply concave; nucleus subcentral, growth-lines slender, rather numerous, not coarse, few, and elevated as in *B. striatula*.

Length, 6.5; width, 4.75; height of aperture, 3 mm.

The short spire, more rapidly increasing whorls, not closely spirally lined, the more oblique aperture, and effuse inner lip distinguish this species from *B. striatula*. *B. Stirlingi* has not a decollated spire, as is usual with its congener, but when the apical whorls are present in the latter they are of more regular increase.

I do not know if *B. Stirlingi* be actually living, though it may possibly be so, as though all of the very numerous examples under observation, excepting one, are bleached and very fragile; yet the unique exception shows slight coloration, the test being unaltered, and it contained an operculum.

I bestow on this modest shell the name of my colleague, who has so largely promoted the exploitation of the extinct vertebrates in the region of its occurrence.

*Var.* MAMMILLATA.

Similar to *B. Stirlingi*, but short and squat, somewhat resembling a *Bithynia*. Whorls five and a-half, the antepenultimate or penultimate suddenly increasing in size, and flatted at the suture, so that the posterior part of the spire appears mammillated.

*Dimensions*.—Length, 5.25; breadth, 3.5; height of aperture, 2.75 mm.

*Locality*.—On the shore of a dry salt lake near Nannine, Murchison Goldfield, W.A., in great abundance (*Mr. Victor Streich*). A few examples at Lake Callabonna.